REMARKS

Claims 1-18 and 20-45 are pending. Claim 19 has been cancelled.

Support for the amendment to claim 1 can be found on page 5, lines 6-17 and at page 5, line 35.

Support for the amendment to claim 4 can be found on page 4, line 19.

Support for the amendment to claim 5 can be found on page 5, lines 6-17 and page 4, line 19.

The amendment to claims 14, 16, 20, 29 have been made for clarity.

Support for new claims 31-33 can be found on page 12, line 2.

Support for new claims 34-36 can be found on page 12, line 3.

Support for new claims 37-42 can be found in claim 16.

Support for new claims 43-45 and the amendment to the paragraph beginning at page 14, line 7, can be found in Table 1, page 13, especially with respect to the endpoint of 2.9 g/cm^3 which can be found in Synthesis Example 4.

No new matter has been added by way of the above-amendment.

[I] Priority Documents

Applicants note that this application claims priority to Application No. 2002-338430 filed in Japan on November 21, 2002. The certified copy of this priority document was submitted to the PTO with a letter dated February 11, 2004. However, the Examiner has not acknowledged receipt of the priority document.

Applicants respectfully request that the Examiner acknowledges receipt of the priority document in the next communication.

[II] Prior Art Based Rejections

The following prior art based rejections are pending:

1. Claims 1-4 and 16-19 are rejected under 35 U.S.C. § 102(b) as being anticipated by Miyasaka (6,416,902);

2. Claims 14-15 and 29-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyasaka; and

3. Claims 5-13 and 20-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyasaka in view of Pynenburg et al. (5,429,890) and in further view of Gorge et al. (6,015,447).

Applicants respectfully traverse all of the rejections.

[IIA] Anticipation Rejection - Rejection (1):

With respect to Rejection (1), in describing the requirements for rejection of a claim by anticipation, the Manual of Patent Examining Procedure (Section 2131) states:

> "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (ref. omitted). "

Furthermore, in *Ex parte Levy*, 17 USPQ2d 1461 (BOPAI, 1990), the Board of Patent Appeals and Interferences has written:

> "Moreover, it is incumbent upon the Examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference (ref. omitted)."

Applicants have carefully reviewed the disclosure of Miyasaka and respectfully indicate that every element in the independent claim 1 is not found in Miyasaka, and as such Miyasaka cannot anticipate the claim. It appears that the closest operative embodiment (lithium-metal
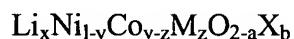
oxide) of Miyasaka is compound C-3 as described in column 12, line 52. However, compound C-3 is outside of the genus of the lithium-metal oxide as described in independent claim 1 of the present invention. Specifically, compound C-3 of Miyasaka has a δ value of 0.7.

Applicants are aware that the anticipation analysis is not limited to exemplified embodiments in a cited reference, however, the anticipation analysis is limited to embodiments that are placed in the possession of the public. Applicants respectfully indicate that Miyasaka cannot anticipate the claim 1, since there is no embodiment of Miyasaka et al. which is encompassed by claim 1 of the present invention that can be said to also be placed in the possession of the public.

[IIB] Rejections (1) and (2):

With respect to Rejections (1) and (2), each of these rejections relies on Miyasaka. The following is a more specific description of the difference between Miyasaka and the invention of the present application.

Miyasaka describes a nickel-containing lithium complex oxide represented by

$$Li_xNi_{1-y}Co_{y-z}M_zO_{2-a}X_b$$

(where $0.2 < x \leq 1.2$, $0 < y \leq 0.5$, $z < y$, $0 < z < 0.5$, $0 \leq a \leq 1.0$, $0 \leq b \leq 2a$) and also discloses an oxide in which $b = 0$ and M is Mn (compound C-3). However, because $y \leq 0.5$ and $z < 0.5$, the quantity ratio of Ni, i.e., 1-y is at least 0.5, so that the quantity ratio of Ni to Mn does not achieve 1:1. Moreover, as is clear from the fact that, when M is Mn (the quantity ratio of Mn, i.e., z not greater than 0.3 is recommended, see column 5, lines 1 to 4), it is preferred in Miyasaka that the difference between the quantity ratios of Ni and Mn is set to be at least 0.2. Thus, Miyasaka fails to describe the invention of the present application, which limits the quantity ratio of Ni to Mn to the vicinity of 1:1, in other words, limits the difference δ between the quantity ratios of Ni and Mn to $-0.1 \leq \delta \leq 0.1$.

Furthermore, with respect to claim 5, Miyasaka neither mentions that Mn of the lithium-containing complex oxide is controlled to have an average valence of 3.3 to 4.

In addition, with respect to claim 14, Miyasaka fails to specify how to adjust the particle size distribution of the lithium-containing complex oxide.

Lastly, the above-described differences between the present application and Miyasaka brings about an excellent effect of the invention of the present application that cannot be expected from Miyasaka, which will be described below with respect to Synthesis Examples 1-9 and Comparative Example 1 of the present specification. The information from Tables 1 and 2 is now reproduced for the Examiner's convenience.

Information from Tables 1 and 2

	Composition	Positive electrode mixture density (g/cm^3)	Discharge capacity (mAh)
Synthesis Example 1	$LiNi_{0.5}Mn_{0.5}O_2$	3.0	602
Synthesis Example 2	$LiNi_{0.5}Mn_{0.5}O_2$	3.0	601
Synthesis Example 3	$LiNi_{0.5}Mn_{0.5}O_2$	3.0	602
Synthesis Example 4	$LiNi_{0.5}Mn_{0.5}O_2$	2.9	586
Synthesis Example 5	$LiNi_{0.42}Mn_{0.42}Co_{0.16}O_2$	3.0	604
Synthesis Example 6	$LiNi_{0.33}Mn_{0.33}Co_{0.33}O_2$	3.0	604
Synthesis Example 7	$LiNi_{0.5}Mn_{0.5}O_2$	2.5	483
Synthesis Example 8	$LiNi_{0.5}Mn_{0.5}O_2$	2.6	493
Synthesis Example 9	$LiNi_{0.5}Mn_{0.5}O_2$	2.5	422
Comparative Synth. Example 1	$LiCoO_2$	3.2	620

In the positive electrodes using positive active materials of Synthesis Examples 1 to 6 (each of which satisfies the configuration according to claim 1 according to the invention of the present application), the density of the positive electrode mixture is substantially as large (at least 2.9 g/cm^3) as that in Comparative Synthesis Example 1 using LiCoO$_2$ (3.2 g/cm^3). Consequently, the non-aqueous secondary battery using this positive electrode can achieve a large capacity of 586 to 604 mAh (see paragraph 0053 and Tables 1 and 2).

On the other hand, Miyasaka indicates that the positive electrode mixture sheet obtained after drying and pressing has a weight of 235 g/m^2 and a thickness of 90 μm (see column 13, lines 10 to 14). The density of the positive electrode mixture calculated from the above values is as low as 2.6 g/cm^3, which is at substantially the same level as the density of the positive electrode mixtures in Synthesis Examples 7 to 9 (2.5 to 2.6 g/cm^3) that do not have the configuration of claim 1 according to the invention of the present application. Since the capacity of the batteries using the positive active materials of the above-noted Synthesis Examples 7 to 9 is as small as 422 to 493 mAh, it is clear that the capacity of the battery based on Miyasaka is also small. Therefore, the invention of the present application and Miyasaka are clearly different in terms of the effects.

Furthermore, with respect to independent claim 14, claim 14 recites a specific particle size distribution of the secondary particles. This particle size distribution is not described in any of the references. As can be seen from the Examiner's comments in the outstanding Office Action, the Examiner does not acknowledge that claim 14 recites a particle size distribution. The Examiner has indicated that the concentration of the particles is a "result effective variable" which can be optimized using routine skill in the art.

First, Applicants respectfully submit that Miyasaka has only recognized that the mean grain size of the primary particle and the mean grain size of the secondary particle should be modified. This is in distinction to the present invention as defined in claim 14 which controls the particle size distribution rather than merely the mean grain size. Miyasaka has not recognized

that the particle size distribution is important to the property of the anode active material as described in inventive claim 14 as asserted by the Examiner. Accordingly, the particle size distribution recited in claim 14 is not a "result effective variable."

Second, the Examiner's attention is directed to the experiments described in Table 5 of the present specification which is herein reproduced for the Examiner's convenience.

Table 5

	Mean particle diameter of complex oxide B (μm)	Mean particle diameter of B / mean particle diameter of A	Ratio of B (wt%)	Positive electrode mixture density (g/cm³)	Discharge capacity (mAh)
Synthesis Example 1	—	—	0	3.0	602
Example 1	5	5/10	40	3.1	620
Example 2	3	3/10	40	3.2	633
Example 3	3	3/10	20	3.2	635
Example 4	3	3/10	5	3.0	605
Example 5	7	7/10	40	3.0	602

As becomes clear from Table 5, in the non–aqueous secondary batteries of Examples 1 to 3 that use the mixture of the lithium–containing complex oxide A and the lithium–containing complex oxide B whose mean particle diameter is not greater than 3/5 of the mean particle diameter of the secondary particles of the lithium–containing complex oxide A, the positive electrode mixture density increased and the filling property of the active material improved, leading to a larger discharge capacity of the batteries. On the other hand, the non–aqueous secondary batteries in Example 4 in which the mixed ratio of the lithium–containing complex oxide B was small and Example 5 in which the mean particle diameter of the lithium–containing complex oxide B was substantially the same as that of the lithium–containing complex oxide A, the positive electrode mixture density and discharge capacity were at substantially the same level

as those of the battery using the lithium–containing complex oxide A of Synthesis Example 1 alone. Accordingly, the effect of mixing the active material was not shown clearly.

These comparative examples show that the particle size distribution is important to the invention described in claim 14 and is a patentable distinction between instant claim 14 and the teachings of Miyasaka.

Accordingly, significant patentable distinctions exist between the presently claimed invention and the teachings of Miyasaka and withdrawal of Rejections (1) and (2) is respectfully requested.

[IIC] Rejection (3):

With respect to Rejection (3), the Examiner acknowledges that Miyasaka fails to teach the combination of lithium containing complex oxide A and lithium containing complex oxide B as presently claimed. The Examiner relies on Miyasaka for teaching an active material containing a lithium containing complex oxide A (as presently claimed) and relies on Pynenburg et al. for the notion that it would be obvious to modify the active material of Miyasaka to *also* include lithium containing complex oxide B (as presently claimed). However, Applicants respectfully submit that the skilled artisan would not be motivated to include the lithium containing complex oxide B (as presently claimed) of Pynenburg et al. in the active material of Miyasaka as asserted by the Examiner.

With regard to Pynenburg et al., this patent aims to provide a battery having a continuous and smooth discharge curve by mixing $LiMn_2O_4$, which produces voltage plateaus at 4.1 volts, 3.9 volts and 2.9 volts and whose discharge curve thus includes inflections, and $LiCoO_2$, which produces a voltage plateau at 3.7 volts (see column 2, lines 55 to 61 and column 3, lines 9 to 19).

On the other hand, in Miyasaka, it is mentioned that the battery employing $LiNiO_2$ has such drawbacks that the average discharge voltage is lower than that of the battery using $LiCoO_2$ by 0.2 volt or more (see column 1, lines 55 to 59). Accordingly, Miyasaka solves these drawbacks by introducing "M" into $LiNiO_2$ so as to form a complex oxide represented by the

above-noted General formula $Li_x, Ni_{1-y}Co_{y-z}M_zO_{2-a}X_b$ (see column 4, lines 40 to 43). Therefore, Miyasaka does not require $LiCoO_2$ to be mixed as described by Pynenburg et al., so that there is no motivation to combine Miyasaka and Pynenburg et al.

In Rejection (3), the Examiner acknowledges that Miyasaka fail to teach the use of flocculated secondary particles. For this aspect of the present invention, the Examiner relies on Gorge et al. However, Gorge et al. describe cobalt metal having a specific particle shape, which does not function as a positive active material for a non-aqueous secondary battery. Therefore, it is not possible to combine the Gorge et al. with Miyasaka or Pynenburg et al.

Accordingly, significant patentable distinctions exist between independent claim 5 and the teachings of Miyasaka, Pynenburg et al. and Gorge et al. and withdrawal of Rejection (3) is respectfully requested.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

[III] Request for PTO-892 Form

Applicants note that the Examiner has not listed the cited references on a PTO-892 Form so that the cited references will be listed on the front page of the patent which issues from the present application. Applicants respectfully request a PTO-892 form from the Examiner in the next communication.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. (Reg.

JWB/GMD/mua
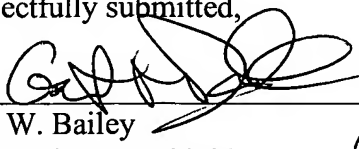
No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an

effort to expedite prosecution in connection with the present application.

Dated: June 26, 2006

Respectfully submitted,

By _____ #43575

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